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## Regularly focus in group contexts

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### Citation

Faddegon, K. J. (2009, January 20). *Regularly focus in group contexts*. Kurt Lewin Institute Dissertation Series. Retrieved from <https://hdl.handle.net/1887/13410>

Version: Not Applicable (or Unknown)

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**Note:** To cite this publication please use the final published version (if applicable).

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## **Chapter 3**

### **Promoting to be the Best, or Preventing not to be the Worst: The Emergence of Regulatory Focus in Disjunctive and Conjunctive Group Tasks <sup>6</sup>**

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<sup>6</sup> This chapter is based on Faddegon, Ellemers, Scheepers (2008)

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## INTRODUCTION

Imagine yourself being in a team quiz where one member of the team needs to find the answer to a difficult question. Probably you would feel *cheerful* when you think you know the right solution and be quite *eager* to answer on behalf of your team. Now think of a quiz in which *each team member* needs to resolve a difficult question for the team to succeed. In this case you would probably feel *relieved* when you think you know the right answer as you would *vigilantly* try not to be the worst member of your group. This example illustrates that the same task (correctly answering a question in a team quiz) might lead to different emotions (cheerfulness vs. relief) and strategies (eagerness vs. vigilance) among team members, depending on the interdependency structure (disjunctive or conjunctive) of the group task. These differences in emotions and strategies described above are the consequence of differences in self-regulation that are referred to in the literature as a “promotion focus” and a “prevention focus” (Higgins, 1997).

Research based on regulatory focus theory (Higgins, 1997) has shown that people can differ in their strategies to obtain desired end-states. In the current paper we apply regulatory focus theory to group contexts and argue that someone’s regulatory focus can emerge from group dynamic processes. Previous research on the effects of different group tasks has already shown that the interdependency structure of these tasks can affect the *amount* of effort group members are willing to invest (e.g. Kerr & Bruun, 1983, Weber & Hertel, 2007). For instance, Kerr and Bruun (1983) observed that a disjunctive group task leads to most effort among high ability group members whereas conjunctive group tasks give rise to most effort among group members with low ability. In the present paper we argue that the interdependency structure of these group tasks not only affects the *amount* of effort group members are willing to invest but also the *direction* of these efforts; i.e. whether their effort is directed towards fulfilling their *duties* and *responsibilities* (prevention focus)

or aims at *accomplishment* and *growth* (promotion focus). By doing this, we connect existing insights on group dynamics to current knowledge on self-regulation, to obtain insights that have both theoretical implications and practical consequences for group functioning and performance.

### **Self-regulation Through a Promotion vs. a Prevention Focus**

Regulatory focus theory distinguishes between two self-regulatory systems underlying the wish to obtain desired end-states, namely a promotion focus and a prevention focus. A promotion focus is rooted in one's *ideals* and wish for *accomplishment* and *growth* and gives rise to a sensitivity for the presence or absence of positive outcomes (i.e. gains vs. non-gains). Furthermore, promotion focused individuals prefer an eager manner to attain their desired end-states. As a consequence, promotion focused individuals tend to be more creative and are more likely to think globally and abstractly (Förster & Higgins, 2005; Friedman, Förster, 2001; Semin, Higgins, Gil de Montes, Estourget, & Valencia, 2005). A prevention focus on the other hand is founded in one's *responsibilities*, *oughts* and *duties* and is characterized by a sensitivity to the presence or absence of negative outcomes (loss vs. non-loss). In order to obtain desired end states, prevention focused individuals prefer to behave in a vigilant manner. As a consequence, prevention focused individuals are relatively more accurate and think more locally and concretely (Förster, Higgins, & Bianco, 2003; Förster & Higgins, 2005; Semin et al., 2005). In addition to these different strategies, regulatory focus is also characterized by the experience of different emotions: people in a promotion focus tend to experience emotions on a cheerfulness – dejection dimension (cheerfulness after success, dejection after failure), while prevention focused persons tend to experience emotions on a quiescence – agitation dimension (quiescence after success, agitation after failure, Higgins, Shah, & Friedman, 1997). Thus, having a promotion or a prevention focus has an impact on the cognitive, strategic and affective processes related to goal-striving.

Research has shown that the preference for a promotion focus or a prevention focus can both be defined as a chronic disposition and as a state that can be induced by different types of situational features such as the pay-off structure of a task (Higgins, 1997, see also Crowe & Higgins, 1997; Förster, Higgins, Idson, 1998). In the present research we examine regulatory focus as a situational state that can be induced by the interdependency structure of a group task.

### **Regulatory Focus In Group Contexts**

Over the past few years regulatory focus has increasingly been studied in group contexts (e.g. Faddegon, Scheepers, & Ellemers, in press; Levine, Higgins, & Choi, 2000; Sassenberg, Jonas, Shah, & Brazy, 2007; Sassenberg, Kessler, Mummendey, 2003; Shah, Brazy, & Higgins, 2002, 2004; Seibt & Förster, 2004). These studies have shown that groups can develop or adopt a joint focus on promotion or prevention. Clearly, whether the joint focus of a group is on promotion or prevention can have important implications for the performance of many groups and (work-) teams. For instance, whereas in some teams group members need to be creative and risk taking (e.g. a development team) and thus a joint focus on promotion is most suitable, for other teams the priority lies in accuracy and risk avoidance (e.g. a security force) and a joint focus on prevention would be most likely to result in good team outcomes. Therefore, being able to shift the attention of team members to promotion or prevention can be a great tool to optimize performance of these teams. Prior research by Levine and colleagues (2000) has shown that over time, group members' regulatory focus strategies can converge to either a promotion or prevention focus, depending on how the outcomes of a joint task are framed (as gains vs. non-gains or as losses vs. non-losses). Faddegon et al. (in press) additionally demonstrated that when a particular regulatory focus is part of the group's identity, individual group members tend to adapt their own behavior to reflect this 'collective regulatory focus', and especially so when they

are highly identified with their group. Finally, it has been shown that specific socio- structural features – such as the relative power position of a group – are associated with a promotion or a prevention focus of individual group members (Sassenberg et al., 2007).

In this previous work regulatory focus was thus either elicited by group-level characteristics such as group identity (Faddegon et al., in press) or group power (Sassenberg et al., 2007), or developed during group interaction due to the way outcomes are framed (Levine et al, 2000). In the present work we argue that a joint focus on promotion or prevention can also arise from the way individual group members relate to each other as implied by the interdependency structure of the group task. This is in line with the approach developed by Levine and colleagues (2000) in the sense that we examine how a joint regulatory focus derives from a group process. Nevertheless, we extend this previous work in that we focus on the way individual group members relate to each other as a source of regulatory focus. That is, we examine the interdependency structure inherent in the group task as a cause for individual group members to adopt a joint focus on promotion or prevention.

### **Group Task Structure as a Determinant of Regulatory Focus**

According to the classic taxonomy by Steiner (1972), a basic distinction can be made between disjunctive and conjunctive group tasks (see also Weber & Hertel, 2007). A disjunctive group task is defined by that high performance of one single group member is sufficient for the whole team to do well on the task. For instance, in a problem solving task this means that if one person is able to solve the problem, no other team member is needed for the team to succeed. As a result, the performance of the team equals the performance of the best performing individual. A conjunctive task on the other hand, requires that the performance of all members reaches a minimum level, such as for instance in industrial teams working on an assembly line. In this case, performance of the team equals the performance of the worst performing individual.

Previous work on disjunctive and conjunctive group tasks mainly has theorized about ways to optimize performance on these different types of tasks (Steiner, 1972). For example, Steiner reasoned that for a group to perform well on a disjunctive task it is critical for group members to accept that the individual best suited for the task at hand provides the solution on behalf of the team. This is most likely to be the case when the right solution is easily recognized. Kerr and Bruun (1983) studied the joint effects of personal ability (high vs. low) and group task structure (disjunctive vs. conjunctive) on motivation of individual group members. They found that high personal ability resulted in a loss of motivation when participants worked in a conjunctive group task but increased motivation when working on a disjunctive group task. Likewise, from their recent meta-analysis, Weber and Hertel (2007) concluded that group members with low ability were more motivated when working on a conjunctive group task than in other types of group tasks.

Thus, previous work on the effects of different types of group tasks was primarily concerned with the amount of individual effort elicited by these different tasks and the resulting performance of the group. However, the regulatory focus adopted by group members resulting from disjunctive and conjunctive tasks has not been studied so far. As noted before, having a promotion or a prevention focus impacts on many factors including strategic behavior and performance (Higgins, 1997). Therefore, it is important to gain more insight in the group situations from which regulatory focus can emerge.

Why would differences in group task structure have different self-regulatory consequences? In a study examining reward allocations, Miller and Komorita (1995) found that disjunctive group tasks lead to more equity based division rules whereas conjunctive group tasks lead to more equality based rules. Miller and Komorita explained this result by arguing that disjunctive group tasks lead to a stronger focus on personal growth, and conjunctive group tasks to a stronger focus on the group as a whole. Among similar lines, we argue that as the worst performing member determines the team's

performance on conjunctive group tasks, this makes group members aware of their *responsibilities* and *oughts* towards their teammates. They can spoil it for the team, and they can be blamed afterwards. As described above, the resulting focus on responsibilities and oughts lies at the core of a prevention focus (Higgins, 1997, Higgins, Roney, Crowe, & Hymes, 1994). Therefore, we predict that a conjunctive group task, in which the team result equals the performance of the worst performing individual, gives rise to a prevention focus among individual team members.

By contrast, we argue that a disjunctive group task, in which team success is determined by the best performing member, frees individual group members from the anxiety that they can spoil it for the rest of their team. Anything group members do can only benefit their team. We argue that in the case of tasks where only gains can be achieved group members adopt a focus on *accomplishment* and *growth* (cf. Miller & Komorita, 1995), which is at the core of a promotion focus (Higgins, 1997, Higgins et al., 1994). Therefore, we predict that a disjunctive group task will lead to the emergence of a promotion focus among group members.

The empirical work devoted to the effects of disjunctive and conjunctive group tasks is relatively scarce (Steiner, 1972; Weber & Hertel, 2007). The current work aims to contribute to this literature by addressing the self-regulatory consequences of these group tasks. We thus argue that these tasks do not only have consequences for the amount of effort group members display, but that they can also lead to *qualitatively* different behavioral strategies and emotions. This is not just theoretically interesting but also bears important practical consequences. Almost every task calls for specific behavioral responses that more likely evolve when people's motivation is in line with specific task demands. Thus, even though much of the current knowledge about task motivation addresses the *amount* of motivation people display, if the *direction* of that motivation is not in line with the task the demands this extra motivation is of little use. For instance, if a work team faces a problem that

requires a creative solution, a strong collective focus on prevention might block openness to new ways to deal with the situation. Therefore, instead of investing more effort on the task in this prevention mindset, switching to a promotion mindset might be more helpful to solve the problem at hand.

### **The Current Research**

We performed two experiments to examine our central prediction that a disjunctive group task will lead to the emergence of promotion focus among individual group members whereas a conjunctive group task elicits a prevention focus among group members. To test this prediction we collect data on regulatory focus-specific perceptions, emotions, and task behavior.

In Experiment 3.1 we examine how members of a minimal group work on an anagram task which was either framed in disjunctive or conjunctive terms. Our main dependent variables in this experiment were participants' self-reported regulatory focus, and their tendency to think "inside or outside the box" while performing the task, which is related to regulatory focus (see below). The second experiment was conducted in a face-to-face group setting. Here, we used the emergence of regulatory focus specific emotions as well as task behavior to assess group members' regulatory focus.

### **EXPERIMENT 3.1**

In Experiment 3.1 participants worked on an anagram task that was either framed as a disjunctive or a conjunctive group task. Participants' self-perceived regulatory focus was measured with an adapted version of the promotion/prevention scale developed by Lockwood, Jordan, and Kunda (2002). The anagram group task itself comprised a behavioral measure to assess the adoption of a particular regulatory focus strategy by individual group members. Previous research has established that promotion-focused individuals tend to

be more creative and think more globally and “outside the box” compared to prevention focused individuals who tend to be more accurate and think locally and “inside the box” (Förster & Higgins, 2005). Anagram tasks are useful to tap into this behavior as it allows for creativity and global thinking (see method sections for details). We predict that a disjunctive group task leads to more self-reported promotion focus and to thinking “outside the box” when working on the anagram task, compared to those working on a conjunctive group task which should result in more prevention focused self-reports and more thinking “inside the box” when working on the anagram task.

In deriving the above hypothesis we have argued that contextual factors (task type) will impact on the regulatory focus of group members. Nevertheless, previous work on regulatory focus in group situations has shown that the effect of situational group features interact with personal regulatory focus (e.g. Faddegon et al., in press, Sassenberg et al., 2007). For instance, in previous research it turned out that the effect of situational group features was more pronounced when it matched the personal (chronic) focus of the group members in question. This is why in the present research we also assessed the regulatory focus preferences of individual group members before inducing the experimental manipulation of group task type, to be able to check whether the effectiveness of our manipulations depended on the way they fit with person’s personal regulatory focus.

## **Method**

### *Participants & Design*

A total of 126 students of Leiden University (23 males, 103 females,  $M_{\text{age}} = 21.1$ ) participated in this experiment. All participants were randomly assigned to the disjunctive or conjunctive group task condition.<sup>7</sup> Participants received €3,- for their participation.

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<sup>7</sup> We counterbalanced our manipulation in terms of outcome framing. That is, the outcome of the second task participants would allegedly have to work on was either presented as a gain or as a

*Procedure*

In this experiment participants worked in a group context on an anagram task (for further details about this task see below). Allegedly, participants would form a team with two other participants (the “blue team”) to compete against another three-person team (the “red” team). The interdependency structure of the group task was presented as either disjunctive or conjunctive.

Upon entry into the lab, participants were individually seated in separate cubicles. Participants were told they would work individually on the task, but that their result would be considered together with the results of the other two blue team members. This “blue team” would be in competition with a “red team” consisting of three participants who were also present in the lab, seated in different cubicles.

Before the detailed instructions for the anagram task were provided, participants were asked to fill out the regulatory focus questionnaire (RFQ; Higgins, Friedman, Harlow, Idson, Ayduk, Taylor, 2001) to measure their chronic regulatory focus. This measure consists of two subscales: promotion pride and prevention pride, that tap into a person’s personal promotion and prevention focus respectively. An example of a promotion items is: “How often have you accomplished things that got you “psyched” to work even harder?” An example of a prevention item is: “Growing up, would you ever ‘cross the line’ by doing things that your parents would not tolerate?” (reverse scored). Participants gave their answers on scale ranging from 1 “never” to 7 “always”. Both scales were sufficiently reliable; promotion pride: alpha = .66;, prevention pride: alpha = .70.

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non-loss. However, this framing did not affect our self-reported regulatory focus,  $t(125) = .282$ ,  $p = .778$ , nor any of our other dependent measures. Also, no interactions with group task framing were observed. Therefore we will not discuss this manipulation any further in the results of Experiment 3.1.

Participants then read that after the anagram task they and their blue team members would work one of two possible other tasks that had to be completed. These tasks were presented as differentially attractive. Allegedly, participants in previous experiments really liked one of these follow-up tasks while they disliked the other task (see Sassenberg et al., 2007 for a similar procedure). Participants were led to believe that which of these two tasks they would work on would depend on their team's performance on the anagram task, relative to the red team. To make the group situation more realistic we also told participants that at the end of the experiment they would meet their blue teammates to be given feedback about their joint performance by the experimenter.

After this information the group task manipulation followed. In the disjunctive group task condition we explained that the performance of a team sometimes depends on the performance of one single team member. We provided participants with some examples of this type of group task, like being part of team quiz, in which one member can determine how well the team performs by providing the correct answer to the question at hand. Then we explained that this team would also work on this type of group task in which group performance is determined by the performance of the best performing group member. Concretely, this meant that we would compare the result of the best performing member of the blue team with the best performing member of the competing red team to determine which of the two teams would work on the (un-) attractive follow-up task.

In the conjunctive group task condition we explained that sometimes the performance of a team depends on the good performance of all group members. In this condition we also provided some examples of this type of group task, like a team that is working on an assembly line in a factory and all members need to perform well to achieve a good result. Then, we explained that this team would also work on this type of group task in which all members would have to perform well for the team to succeed. Concretely, this meant that

we would compare the result of the worst performing member of the blue team with the worst performing member of the competing red team to determine which of the two teams would work on the (un-) attractive group task.

Then, the instructions for the anagram task followed, which stated that group members had to find as many solutions as they could for each of 10 anagrams. They could work as long as they wished on each anagram. The anagrams all consisted of three, four or five letters and could be resolved in multiple ways (e.g. ECHAP, solutions: Cheap, Peach; DGO, possible solutions: dog, god). The performance on the anagram task for each participant consisted of the total number of correct solutions they would find.

After completing the anagram task, participants completed a self-report measure of regulatory focus. Finally, participants were told that due to time limitations the second task would be cancelled after which they were debriefed, paid, and thanked for their participation.

#### *Dependent Measures*

*Self-reported Promotion/Prevention Orientation.* We used an adapted version of the “promotion/prevention” scale (Lockwood et al., 2002) to measure participants’ regulatory focus directly after they worked on the group task. This scale consisted of 5 promotion and 5 prevention items. Answers were given on a scale ranging from “1” not at all to 7 “totally so”. Examples of promotion items are: “I frequently imagine how I will achieve my hopes and aspirations” and “Overall, I am more oriented toward achieving success than preventing failure” Examples of prevention items are: “In general, I am focused on preventing negative outcomes in my life” and “I am more oriented preventing losses than I am toward achieving gains.” To obtain a single continuous measure of regulatory focus, participants’ prevention scale scores were averaged and subtracted from the mean score of the promotion scale scores. The resulting difference score indicates more promotion with high scores and more prevention with low scores (see Faddegon, et al., in press, and Sassenberg et al., 2007 for similar procedures). Considering the number of items we observed

reasonable alpha's for both scales: promotion scale: alpha = .66; prevention scale:, alpha = .56.<sup>8</sup>

*Thinking outside the box.* Previous research has demonstrated that a promotion focus is characterized by creative behavior, more global and abstract thinking, and thus the inclination to “break new ground”. A prevention focus, by contrast, is characterized more by local en detailed perceiving and “rule following behavior” (Friedman & Förster, 2001, Förster & Higgins, 2005, Semin et al., 2005). In other words, whereas a prevention focus is characterized by “thinking inside the box”, a promotion focus is characterized by “thinking outside the box”. We captured these tendencies in two ways using our anagram task. First, we counted the number of *self-invented* words. These are words that are not listed in the dictionary but fulfill the criteria for “real” Dutch words in terms of the combination and order of vowels and consonants (neologism; e.g., norent). Second, we also counted the number of non-Dutch words (mainly English or German; e.g., lips, ende) that were proposed as anagram solutions. Two raters unaware of condition scored the self-invented words and non-Dutch words and disagreement only existed in a few cases (<5%) and was resolved through discussion. Even though participants were not explicitly told in which language the anagrams should be, we ran the experiment in the Netherlands and all instructions and measures were in the Dutch language. Thus the imposed aim of the task was to find Dutch solutions, and proposing non-Dutch words as solutions can be considered as indicating a more global, abstract way of thinking about the task (i.e., “thinking outside the box”), or even “rule breaking” behavior, which is associated with a promotion focus. By contrast, limiting oneself to words about which one is absolutely sure that it is a correct

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<sup>8</sup> The reliability of the prevention scale could be improved by deleting one item (new alpha = .63). Doing so also made the effect of group task on this scale somewhat stronger, although the general pattern of means was similar to the effect that is reported now (i.e., based on a scale comprising all items). With this in the back of our minds, and in combination with the fact that the scale has been validated and proven to be reliable in earlier research, we decided to keep all items in the scale for our main analysis.

Dutch word is a more vigilant, rule following strategy (“thinking inside the box”), which is associated with a prevention focus. We added the amount of creative (self-invented words) and global (non-Dutch words) solutions to form a single index of “thinking outside the box”. Correlation analysis revealed that both measures were positively correlated,  $r(125) = .24$ ,  $p = .007$ . This is consistent with the notion that both are indicators of the same way of thinking.

## Results

### *Analytic Strategy*

For all analyses described below we first tested for main effects of the group task, while controlling for participants’ chronic promotion and prevention focus. After this first step we tested for interactions among group task and personal regulatory focus. Following Higgins’ advice (see [www.columbia.edu/cu/psychology/higgins](http://www.columbia.edu/cu/psychology/higgins)) concerning how to analyze the effects of chronic regulatory focus (in this case the self-strength guide, see Higgins et al., 1997) we both checked for the interaction with promotion focus while controlling for prevention focus, and for the interaction with prevention focus while controlling for promotion focus. Therefore, for each dependent measure we performed a hierarchical multiple regression entering the main effect of group task and personal promotion and prevention focus in step one. In step two we either entered the interaction of group task and personal promotion focus or the interaction of group task and personal prevention focus.

### *Self-reported Promotion/Prevention Orientation*

This analysis revealed a main effect of personal promotion focus (as measured with the RFQ) with higher a priori promotion values predicting higher values on the promotion/prevention difference score after the group task,  $\beta = .56$ ,  $t(122) = 6.02$ ,  $p < .001$ . A priori personal prevention focus, was not significantly related to the promotion/prevention difference score after the task,  $\beta = -.09$ ,  $t(122) = -.95$ ,  $p = .344$ . However, more relevant for the current purposes was the observed main effect of group task  $\beta = .19$ ,  $t(122) = 2.42$ ,  $p =$

.017. In line with our main prediction, in the disjunctive condition ( $M = 1.20$ ) group members reported a relatively stronger promotion focus, as compared to the conjunctive condition ( $M = 0.77$ )<sup>9</sup>. No higher order effects were observed.

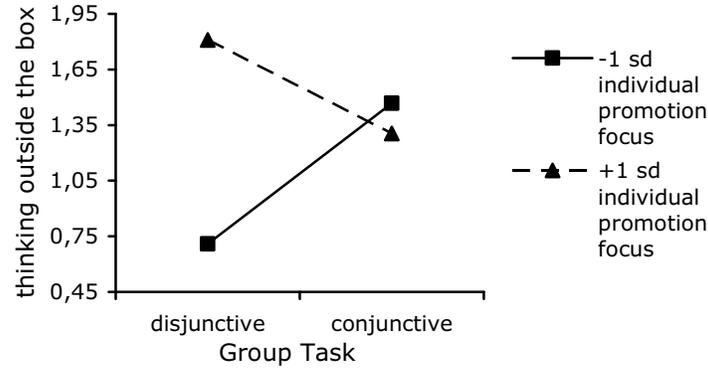


Figure 3.1. “Thinking outside the box” on the anagram task as a function group task and personal promotion focus.

#### Thinking Outside the Box

With regard to “thinking outside the box” on the anagram task, no main effect of group task was obtained. However, we did observe a significant interaction between personal promotion focus and group task on this measure,  $\beta = .18$ ,  $t(120) = 3.09$ ;  $p = .050$  (see Figure 3.1). In line with predictions, more “thinking outside the box” took place in the disjunctive condition than in the conjunctive condition, but this was only the case when group members had a personal focus on promotion. Simple slope analyses (Aiken & West, 1991) indicated that “thinking outside the box” was positively related to personal promotion focus in the disjunctive group task,  $\beta = .55$ ,  $t(120) = 2.44$ ,  $p = .016$ , but not in the conjunctive group task,  $\beta = .08$ ,  $t(120) = -0.36$ ,  $p = .721$ . Apparently, the disjunctive task allowed group members to behave more

<sup>9</sup> The means of the components of the promotion/ prevention difference scale are  $M = 5.27$  (promotion),  $M = 4.07$  (prevention) for the disjunctive condition, and  $M = 4.93$  (promotion),  $M = 4.15$  (prevention) for the conjunctive condition.

creatively, think more globally, and break new grounds, but only those high in promotion focus did actually do so.

### **Discussion**

The main aim of this first experiment was to examine our hypothesis that a disjunctive group task leads to the emergence of a promotion focus among group members, whereas a conjunctive task induces group members to adopt a prevention focus. The results of Experiment 3.1 largely confirm this hypothesis, by showing that disjunctive group tasks lead to promotion focus consistent self-reports compared to conjunctive group tasks which result in self-reports more indicative of a prevention focus. A similar result was found for group members' behavior. Individuals with a promotion focus did think more "outside the box" during the anagram task when working on a disjunctive group task than when working on a conjunctive group task. Thus, this first experiment provides clear evidence that regulatory focus can emerge from the interdependency structure of the group even though personal preferences for promotion or prevention may make individual group members more or less susceptible to the effects of the group task structure. With a second experiment we aimed to replicate this effect while using another type of group situation (face-to-face interacting groups) and a less obtrusive measure of regulatory focus.

### **EXPERIMENT 3.2**

A main difference between the real-group setting in Experiment 3.2, compared to the minimal group situation in Experiment 3.1, is that in the current experiment participants could see their fellow group members working on the task, and adjust their own task behavior accordingly. This situation is more similar to group contexts in real life where group members seldom work

in absolute anonymity and most often interact verbally or non-verbally with fellow group members.

Another difference with Experiment 3.1 is the main dependent measure we employed to assess group members' regulatory focus. In Experiment 3.1 we used a direct self-report measure of regulatory focus, i.e. the promotion/prevention scale (Lockwood et al., 2002). In this second experiment we shifted to a less obtrusive measure of regulatory focus by assessing regulatory focus-relevant emotions group members experienced when working on either a disjunctive or conjunctive group task. As explained in the general introduction, the experience of emotions on a cheerfulness – dejection dimension indicates a promotion focus, while emotions on a quiescence – agitation dimension are characteristic for a prevention focus. In line with the central hypothesis of this paper we predicted that participants working on a disjunctive group task primarily experience emotions on the cheerfulness-dejection dimension (indicative of a promotion focus), while the emotions of people working on a conjunctive group members experience relatively stronger emotions on the quiescence-agitation dimension (indicative of a prevention focus).

As a group task participants worked in this second experiment on a tower building task (Jenga®) that was framed in either disjunctive or conjunctive terms. We included the height of the towers participants built as a behavioral measure of group members' regulatory focus. Because a promotion focus leads to a focus on advancement and growth and a prevention focus on responsibility and oughts, we predicted that participants working on a disjunctive group task (promotion) would be more inclined to build high towers than participants working on a conjunctive group task (prevention).

The face-to-face setting in Experiment 3.2 also allows us to examine in a meaningful way the diversity of group members in terms of their task behavior because group members could actually see the performance of fellow group members and adapt their own efforts accordingly. In line with earlier research of Kerr and Bruun (1983) we propose that in a conjunctive group task

being a relatively poor performing member motivates people to show a good performance because the worst member can spoil it for the group. As a result we anticipate relatively little variance in performance among group members working under these conditions. By contrast, and following the same line of reasoning, on disjunctive group tasks being a relatively highly performing member is motivating while lying behind motivates less as only the best member accounts for the team performance. Accordingly we predict relatively more behavioral variance in performance in a disjunctive group task than in a conjunctive group task. Therefore, more behavioral similarity (i.e. less variance in performance) is predicted among teams working on a conjunctive group task in comparison with teams working on disjunctive group task.

## **Method**

### *Participants and Design*

Participants were invited to the lab where they formed groups with 2 other same-sex participants who were present in the same session. Each group was randomly assigned to the disjunctive or conjunctive task condition. Participants received €3,- for participating. A total of 35 groups, or 105 individuals (36 men and 68 women, varying in age from 18 to 28) participated in this experiment. Due to technical problems, the questionnaire results for one participant were not recorded. However, we did code the behavioral data for this participant, which were included in our behavioral analyses.

### *Procedure*

The experiment consisted of three parts. During the first and third part participants worked individually and separated by Styrofoam walls at a laptop computer to read the instructions (first part) and indicate the emotions they experienced after the group task (third part). In the second part they actually worked together with two other participants on the group task. Before the instructions concerning the experiment started, like in Experiment 3.1 participants were administered the regulatory focus questionnaire (Higgins et

al., 2001) to measure their personal regulatory focus. Then a general instruction started concerning the group task participants would work on (a brick building task, for details, see below). In this general instruction, subjects read that they would work together on a group task with two team mates and that they would jointly work on this task at the table in the middle of the room. After the general instruction, the nature of the group task (disjunctive vs. conjunctive) was explained in a similar way as in Experiment 3.1, except that in Experiment 3.2 no competition with another team was mentioned. All members in one team received the same group task type instruction (i.e. all group members received either the disjunctive group task manipulation or they all received the conjunctive group task manipulation).

Then the brick task instructions followed. We adapted our task from a popular game: Jenga®. In our adapted task, group members were each requested to build a tower using 54 wooden bricks. The aim was to build a tower of maximum height, without letting the tower collapse in a maximum of 3 minutes (an alarm clock on the table provided information about how much time was left to complete the task). Even though they would each work independently of each other on the brick task they would sit at the same table and their performance would be considered together with the performance of their team members. Participants in the disjunctive group condition were led to believe that only the highest tower of the team would be determined as a measure of the team performance. For teams in the conjunctive task condition participants heard that the performance of the team would only depend on the lowest tower built by the team.

After the brick task, participants were instructed to return to their laptop computer where they individually filled out a questionnaire about the emotions they experienced after working on the brick tasks. Finally, we asked participants to indicate their gender, age and their study major. Participants were then debriefed, thanked, paid, and dismissed.

*Dependent Measures*

*Checks*<sup>10</sup>. As a manipulation check we asked participants to identify the type of group task (disjunctive or conjunctive) they would work on as a team by clicking on a description of either a disjunctive or a conjunctive group task. At the behavioral level we also checked the variance in the height of the towers that participants built. Based on research on disjunctive and conjunctive group tasks (e.g. Kerr & Bruun, 1983), we expected more variability in tower height in the disjunctive than in the conjunctive group task condition. This measure thus is not interpreted as evidence for the activation of a promotion or prevention focus, but serves as a behavioral check for the group task manipulation.

*Regulatory focus-relevant emotions*. After completion of the brick building task we asked participants to indicate the extent to which they experienced a number of regulatory focus related emotions when they considered the obtained results of their team during the task (e.g. “To what extent did you experience [joy] when considering the results your team obtained during the brick-building task”). Answers were provided by clicking with the mouse on a continuous line ranging from 0 ‘not at all’ to 100 ‘a lot’. The emotions we measured included 6 emotions that represented the cheerfulness-dejection dimension (promotion emotions) and 6 emotions that reflected the quiescence-anxiety dimension (prevention emotions). The promotion emotions with a positive valence were happy, cheerful, and enthusiastic, while the promotion emotions with a negative valence comprised sad, unhappy and discouraged. The set of prevention emotions comprised relaxed, quiet and calm (positive valence) and stressed, restless and anxious (negative valence). Following Higgins and colleagues (1999), and Shah and

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<sup>10</sup> We also administered this manipulation check in Experiment 3.1, but due to a technical problem only the data of the disjunctive task condition were retained in this experiment. However, all participants in this condition correctly indicated that they would be working on a disjunctive group task.

colleagues (2004), we conceptualize dejection and cheerfulness as lying on the same bipolar (promotion) dimension which implies that shifts towards cheerfulness imply less dejection, and vice versa. Likewise, prevention emotions (quiescence and agitation) are also conceptualized as opposite poles of the same dimension.

*Behavioral measures.* During the brick building task we were interested in the height of the towers, which we measured in cm. As explained above we predicted that groups in the disjunctive task condition would on average build higher towers than groups in the conjunctive task condition.

## Results

### *Checks*

Two participants in the disjunctive condition and one in the conjunctive task initially failed to indicate the correct type of task they would be working on. Before proceeding with the experiment we provided these two participants with feedback about the correct response. Therefore, their data were included in the final analysis. As a behavioral check of our group task manipulation we also calculated the mean variance in the height of the towers they built. As predicted, participants in the disjunctive group task condition displayed more variance in the height of the towers they built ( $M = 13.28$ ) than members of the conjunctive group ( $M = 5.29$ ),  $t(28) = 3.60$ ,  $p = .001$ . This result is consistent with the notion based on previous research (e.g. Kerr & Bruun, 1983), that the level of performance of people working on a conjunctive group task is similar to the performance of their fellow group members while this is less likely to be the case when working on a disjunctive group task.

### *Regulatory Focus-Relevant Emotions*

A principal components analysis, using varimax rotation, on the emotion items revealed a two factorial solution which explained 62.8% of the variance. These components could be interpreted as a promotion and a prevention component (see Table 3.1 for the factor loadings). As intended the

promotion dimension represented positive and negative promotion emotions, and the prevention dimension represented positive and negative prevention emotions. In both cases positive and negative emotions loaded on the same factor but with opposite factor loadings. Higher scores on the promotion dimension indicate activation a promotion focus and higher scores on the prevention dimension indicate activation prevention focus. We performed a repeated measures GLM on the orthogonal (standardized) factor scores that were obtained from the principal component analysis. In the repeated measures model we included group task type (disjunctive vs. conjunctive) as a between subjects factor, and the two regulatory focus emotion dimensions (promotion vs. prevention) as a within subjects factor<sup>11</sup>.

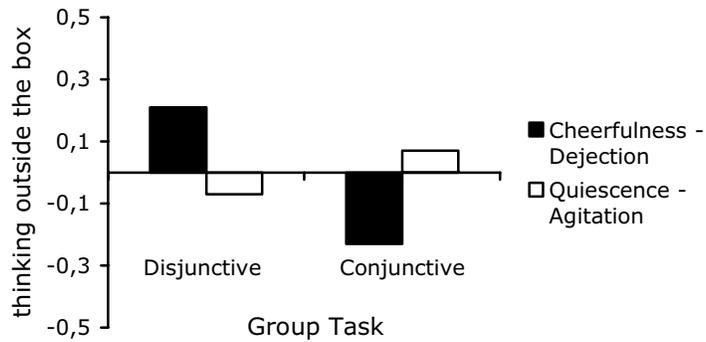
This analysis yielded a significant interaction between group task type and type of regulatory focus dimension,  $F(1, 102) = 4.68$ ;  $p = 0.033$ <sup>12</sup>, revealing the predicted pattern (see Figure 3.2)<sup>13</sup>. Participants in the disjunctive condition experienced more emotions on the promotion-dimension than participants in the conjunctive group task, while participants working on the conjunctive task experienced more prevention-oriented emotions than members in the disjunctive task condition.

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<sup>11</sup> Like in Experiment 3.1 we also examined the effects of personal promotion focus and personal prevention focus. Interestingly, we observed a positive correlation between personal promotion focus and the promotion emotion dimension ( $r(104) = .26$ ,  $p=.001$ ), which conceptually replicates the main effect of personal promotion focus in Experiment 3.1 and empirically validates the promotion emotion dimension. No higher level interactions with personal promotion or prevention focus were observed ( $F$ -values  $< 1$ ) nor did inclusion of these personal regulatory focus measures affect the interaction between group task and emotion dimension.. For simplicity, therefore, we excluded these measures from the final analysis.

<sup>12</sup> The emotion data were also analyzed at the group level, yielding a similar pattern of results, that due to a limited sample size was marginally significant,  $F(1, 33) = 3.22$ ,  $p = .08$ .

<sup>13</sup> Note that in Figure 2 standardized factor scores are displayed. Values above zero therefore indicate scores higher than the observed mean; scores below zero indicate scores lower than the observed mean.



*Figure 3.2.* Factor scores on the promotion and prevention dimension as a function of group task and regulatory focus dimension of the emotions (promotion vs. prevention).

#### *Behavioral Measures.*

We examined the effect of the task type manipulation on the mean height of the tower built, as well as its variance (see Checks), at the group level (i.e., for every group the mean height and the variance in height of the towers was calculated). In 5 groups (2 conjunctive and 3 disjunctive), one of the group members' tower collapsed during the task. Although when the tower collapsed participants had to start building from scratch, this made their performance qualitatively different from groups in which no tower collapsed. However, the number of cases in which this happened was too small to permit for statistical analysis of these groups separately. Because the results of groups in which a tower collapsed were less comparable with other groups, we performed all further analyses on the remaining 30 groups in which none of the towers collapsed during the group task.

Regarding the height of the tower we found evidence for our predictions. Participants in the disjunctive group task condition built higher towers ( $M = 52.12$ ) than did participants in the conjunctive group task condition ( $M = 45.42$ ),  $t(29) = 1.76$ ,  $p = 0.045$ , one-tailed. This thus confirms our hypothesis that in the disjunctive group task condition, participants members'

focus on advancement and growth lead them to be more ambitious and to build higher towers.

Table 3.1 *Factor loadings emotions after varimax rotation (values under .30 suppressed)*

Type of emotion	Prevention factor	Promotion factor
Happy		.83
Enthusiastic		.86
Cheerful		.85
Discouraged	.43	-.54
Sad	.42	-.60
Unhappy	.47	-.58
Calm	-.83	
Quiet	-.66	
Relaxed	-.74	.32
Tense	.83	
Restless	.85	
Anxious	.70	

### Discussion

The main aim of the second experiment was to replicate and extend the findings of Experiment 3.1 in a face-to-face group setting, using different measures of regulatory focus. In line with our predictions, we found that the interdependency structure of the group task impacts on the type of emotions group members' experience, as well as on their behavior. As a result, both emotions and behavior were more in line with a promotion focus when group

members worked on a disjunctive group task, and more in line with a prevention focus when group members worked on a conjunctive group task.

Additionally we were interested in gaining more insight in the group processes in these different group tasks and examined the similarity in actual performance in both disjunctive and conjunctive group tasks. Confirming our hypothesis we found that conjunctive group members are more similar in terms of performance than members of disjunctive group tasks.

Altogether, this second experiment again substantiates our reasoning that the interdependency structure of a group leads to the emergence of a regulatory focus among group members that not only influences group members' self-perceptions and behavior, but also impacts on the type of emotions group members experience. Moreover, by showing that these effects occur in a face-to-face interacting groups, it has become clear that these effects do not stem from instrumental concerns in inter-group competition (as might been the case in Experiment 3.1) but result from the group dynamics elicited by the task interdependence they face in an intra-group context.

## **GENERAL DISCUSSION**

In two experiments we examined whether regulatory focus can emerge from the interdependency structure of a group. To this end we compared individuals working on disjunctive and conjunctive group tasks. We predicted that a disjunctive group task would lead to a promotion focus, whereas a conjunctive group task would lead to a prevention focus. These predictions were tested in both "virtual" and real interacting groups, and by assessing regulatory focus in a variety of ways (self-reports, emotions, and behavior). Overall, the results were in line with predictions.

The current findings have both theoretical and practical implications. First of all, they contribute to the recent integration of self-regulation theories

within group psychology (Faddegon et al., in press; Levine et al., 2000; Sassenberg et al., 2003, 2007; Shah et al., 2002, 2004; Seibt & Förster, 2004). We add to this literature by showing that characteristics of the group – whether the group task is structured as disjunctive or conjunctive – can change participants' underlying motivation resulting in the emergence of a regulatory focus. Moreover, our work shows that the influence of the interdependency structure of groups on regulatory focus is relatively independent from group members' personal focus and can directly elicit regulatory focus related responses among group members.

In this sense, our work has also consequences for the regulatory focus literature more generally. This literature has focused for a large part on individual preferences for a promotion focus and a prevention focus. The current research, together with earlier work on regulatory focus in group contexts (e.g. Faddegon et al., in press, Levine et al. 2000, Sassenberg et al., 2007), shows that groups can greatly influence group members' regulatory focus and that their behavioral responses cannot simply be deduced from their personal preferences for promotion or prevention. In addition, we were able to demonstrate direct effects of these group tasks on group members' regulatory focus, thereby providing an alternative way of manipulating someone's regulatory focus apart from more traditional methods like changing the pay-off structure or priming ideals vs. oughts (e.g. Crowe & Higgins, 1997, Freitas & Higgins, 2002).

The current findings have also implications for the group dynamics literature, and in particular for the literature on the interdependence structure of groups. Prior research on this topic is scarce and has predominantly focused on the *amount* of effort invested by group members as a function of the interdependence structure. The current work is complementary with this earlier work by showing the impact of the interdependence structure on the *direction* of their motivation – i.e., whether group members will adopt a

promotion or a prevention focus. We hope that the novel perspective we offer provides a new impulse for research on this topic.

Turning to the practical consequences we think that a shift in group members' regulatory focus can have important consequences for the functioning and performance of teams. After all, most team tasks require different behavioral responses of group members like accurateness vs. creativity, more global vs. more local processing, risk taking vs. risk-avoidance. These are precisely characteristics that regulatory focus impacts on.

Although most teams cannot be fully characterized as disjunctive or conjunctive group tasks, many groups contain a mixture of opportunities for group members to perform well for their team (disjunctive characteristics) and things they can do to spoil it for their group (conjunctive characteristics). It could be useful for managers to be aware of the motivational consequences of these group characteristics and adjust them if necessary to bring the interdependency structure more in line with the behavioral responses needed for the team to perform well (i.e., a more disjunctive structure in a produce development team, and a more conjunctive structure in a security team).

Though we found effects of the disjunctive and conjunctive group tasks on a promotion and prevention focus in both experiments, the effects on promotion focus were generally somewhat stronger than those on prevention focus. For example, in Experiment 3.1 the effect on "thinking inside/outside the box" was moderated by personal promotion focus, but not prevention focus. Although we cannot exclude the possibility that this result was the consequence of the specific group tasks that we used, another interesting explanation for this asymmetry can be based on the work by Lee, Aaker, & Gardner (2000). These researchers demonstrated that whereas an independent self-construal is associated with a promotion focus, an interdependent self-construal is associated with a prevention focus. From this work, it can be inferred that groups by definition make people somewhat more prevention focused (see also Paulus & Dzindolet, 1993), which makes it more difficult to

further manipulate group members into a prevention focus. Although at this point we can only speculate about this possibility, it is in our view noteworthy that our research thus shows that groups do not *solely* induce prevention but can also lead to a promotion focus when e.g., working on a disjunctive group task. Also important to note in this context is that from our manipulation check data we have no reasons to suspect any differences in the effectiveness of one of our manipulations that could be responsible for an asymmetry.

As with all research, the current studies also raise questions to be examined in future work. For example, as outlined above, many group tasks involve both disjunctive and conjunctive aspects, and it would be interesting to examine the role of personal regulatory focus in *interpreting* such situations. One can predict that promotion focused group members will focus more on the disjunctive characteristics of the task whereas prevention focused group members will focus more on the conjunctive characteristics of the task. This in turn also leads to other interesting questions about *diversity* in groups regarding regulatory focus, and its influence on group performance. As many tasks involve both disjunctive and conjunctive aspects, a diverse group in terms of group members' regulatory focus might outperform a more homogeneous group in terms of regulatory focus.

With the current work we have made an important new step in understanding how the interdependence structure of groups impact on group members cognitive strategic and emotional responses. By doing so, our work contributes to the literatures on group dynamics and self-regulation and at the same time it has practical consequences for how to structure group tasks to enhance performance of teams.

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